INEQUALITIES IN INTERNATIONAL TRADE AMONG
DEVELOPING NATIONS

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PREFACE

The following report is presented in partial fulfillment of the requirements for the Master of Arts degree in Economics, at Kansas State University.

The subject-matter of the paper was chosen because of its relation to economic development which will be one of the fields of interest of the author in pursuing further graduate study.

The first chapter contains a short discussion on inequality, what it means, and the possible ways of measuring inequality. The specific measures used in the report to examine inequalities in gross national product and trade among countries is discussed in detail.

In the second chapter a study is made of the inequalities in the world distribution of gross national product, exports, imports and total trade for the period, 1950 to 1962. An attempt is made to assess the trends and examine the changes in inequalities over this period.

In the third chapter emphasis is switched to the divergency between the developed and the less developed countries. An examination is made of the changes in inequalities between the developed and less developed countries. The countries are then grouped according to per capita incomes and a study is made of the changes in inequalities which have taken place over this 1950-1962 period. These groups are also compared with the United States over this same period.

In the fourth chapter a study is made of the changes in inequality among different regions of the world. These regions are the English Speaking and European countries, Latin America, Middle East, Asia and Africa. An attempt is also made to examine the inequalities in gross national products and trade among the countries within these groups. The fifth and final chapter presents a summary of the findings of the report.

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INTRODUCTION

This is a study, primarily empirical in nature, of international trade and the changes which have occurred in the distribution of gross national product, exports and imports over the period from 1950 to 1962. The study includes eighty-five free market countries which are members of the United Nations.

The problem of inequality in the distribution of income and trade among countries has received much attention in the last fifteen years.[1] This is especially true with respect to the purported divergence of income and trade between the developed and the less developed countries. It is the major contention of some economists that this gap is large and increasing.[2]

This has prompted a number of proposals for narrowing this gap such as export promotion, import substitution and the granting of trade preferences for the less developed countries. Although much attention has been focused on how to narrow the differences or inequality among countries, very few attempts have been made to examine the actual quantitative aspects of these differences.[3]

The purpose of this study is to examine the distribution of income and trade to see if the divergence and inequality

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[1] United Nations, "Towards a New Trade Policy For Development," Report by the Secretary-General of the United Nations Conference on Trade and Development, New York, 1964, p. 4-5.

[2] Three of the major proponents of this line of thinking is Hans Singer, Gunnar Myrdal and Raul Prebisch.

[3] One of the best studies is one by Theodore Morgan, "Economic Relationships Among Nations: The Pattern of Commodity Trade", The Economic Ideas of Mankind. Ed. by Berthold Hoselitz (New York: Columbia University Press, 1965).

between the developed and the less developed countries is increasing. An examination of the divergence of income and trade between different regions of the world is also made.

To measure this divergence the income and trade data of the countries was converted into United States dollars at 1960 prices. This provided a standard with which comparisons were made. The Lorenz curve concentration ratio was then used as a measure of inequality. The countries were grouped according to different criteria of development and the divergence and trends in gross national products, exports, imports and trade were examined.

CHAPTER I

MEASURES OF INEQUALITY

Measurement denotes comparison which makes it necessary
to consider a norm or standard against which actual inequality
might be compared. A prerequisite to measuring inequality in
international trade and income among developing countries then
is to establish what is meant by equality. It probably isn't
correct to assume that each country or each proportion of the
population should have the same proportion of income, exports
or imports. Although this might seem desirable from a moral
standpoint, it is beyond the realm of feasibility. Each country
has certain characteristics which dictates a proportionate equal-
ity. Proportionate equality means that the division of income
and trade is determined by the factor endowments of the countries
as well as the initative of the people, geographic location, and
numerous other things. For example, the United States is geo-
graphically located in an environment conducive for agriculture
production, while the Soviet Union's location is less suitable
for agriculture production. This is a fact and this is an exam-
ple of factors which determine the proportional equality. The
extent of this proportionality would be difficult to establish
under any circumstances even for only a small number of countries.

No attempt has been made to divise this type of measure-
ment; however, some insight to the situation can be gained from
describing degrees of inequality in terms of deviations from the

equalitarian ideal.[4] Therefore, any norm may serve as a theo-
retically useful standard for factual comparisons. This very
conveniently allows examination of changes which have taken
place over a period of time. There are a number of measures of
inequality each having certain advantages as well as disadvant-
ages.

The Pareto Coefficient

One of the earliest measures of income inequality was intro-
duced by Vilfredo Pareto in 1897. This measure consisted of
plotting, on double-logarithmic paper, the size of an individuals
income against the number of income receivers having that income
or larger.[5] Pareto's formula was $\text{Log } N_x = K - \alpha(\log X$ where N_x
is the number of income recipients with an income of X or greater
and K and α are constants.[6] It implies that plotting N against
X on double-logarithmic paper gives a straight line with a
slope α. This α is the coefficient of inequality. Pareto's
measure emphasized the upper part of the income distribution
and thus failed to consider the character of the rest of the
distribution. This failure to consider the whole distribution
results in an inadequate measure of the degree of inequality.

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[4]Alker, Hayward R., Mathematics and Politics (New York: The
Macmillan Company, 1965), p. 36.

[5]Bowman, Mary J., "A Graphical Analysis of Personal Income
Distribution in the United States", American Economic Review,
Vol. XXXV, September, 1945, p. 615.

[6]Kravis, Irving B., The Structure of Income (Washington, D.C.:
McGregor and Werner, 1962), p. 180.

The Coefficient of Variation

The normal frequency distribution suggests that the most frequent occurrence of the characteristic is the average one. A common measure of dispersion, or inequality, is the standard deviation. Assume f_i represents the frequency and Y_i the mean income in an income class and $\bar{Y}$ the mean income of the entire distribution. Using this notation the standard deviation (σ) for grouped data may be approximated by

$$\sigma = \sqrt{\frac{\sum f_i Y_i^2 - \bar{Y}_i^2}{\sum f_i}}$$

where the summations are over the data subclasses.[7] This measure may be standardized by dividing it by the mean of the variable being studied. This reduces its dependence on the measurement units being used, giving what is called the coefficient of variation.

Despite their statistical properties, these two measures suffer from two difficulties not found in alternative measures of inequality, such as the mean deviation or concentration ratio. First, average squared deviations from a mean are not easily understood by the nonstatistician especially if a normal frequency distribution cannot be assumed. Secondly, such measures

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[7]Ibid. p. 181

are sometimes sensitive to the way in which the more extreme data points are grouped.[8]

Shares by Quantization

This method of measuring inequality considers the entire distribution presented in terms of the proportion of the total distribution accruing to equal segments such as tenths, fifths or fourths.[9] Advantages of this procedure is that it avoids making a single summary measure. However, in some instances this can be a major disadvantage, since it tends to complicate the process of comparison. It lacks the one statistic measure which facilitates comparison.

A more extreme measure of a distribution is to consider the percentage of the total held by a given top percent of units. This type of measurement is often used in studying business concentration.

The Lognormal Distribution

The lognormal distribution may be defined as the distribution of a variate whose logarithm obeys the normal law of probability.[10] The lognormal distribution has been used as a

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[8] Yntema, D., "Measures of the Inequality in the Personal Distribution of Wealth", Journal of American Statistical Association, Vol. XXVIII, 1933, p. 429.

[9] Kravis, 178.

[10] Aitchison, J. and Brown J.A.C., The Lognormal Distribution (Cambridge: University Press, 1957), p. 1.

statistical description of given data in measuring inequality.[11]

Sometimes the logs of data conform more closely to a normal distribution than does the data in natural numbers. This suggests that the standard deviation of the logs might be a better evaluation of differences in various distributions. This would be true in comparison with the standard deviation and coefficient of variation of natural numbers.

The Lorenz Curve Concentration Ratio Principle

The Lorenz Curve was first discussed in 1905 by M.C. Lorenz. Since that time it has become a very useful device for measuring inequality.[12] This measure compares cumulative distributions with theoretically determined norms. The Lorenz type diagram allows for both visual and quantitative comparison of the cumulative relationship between two variables with the overall arithmetic mean relationship. The axes of Lorenz diagrams are measured in percentages which facilitates summary description at other periods and with other groups of data. Another attractive feature is that it represents a summary description by a single value measure which is convenient for comparing particular facets of different curves.

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[11]Ibid. p. 107.

[12]Lorenz, M.C., "Methods of Measuring Concentration of Wealth" Publications of the American Statistical Association, Vol. II (New Series 1905) p. 209.
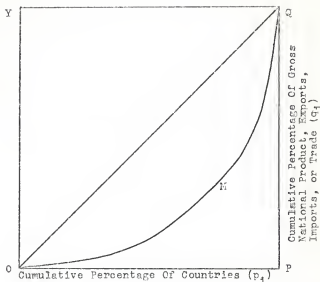
Figure 1

The Lorenz Diagram

Quantitative comparisons involves computation of the concentration ratio. The concentration ratio is the ratio of the area of actual concentration to the area of maximum possible concentration. In Figure 1 this would be the area enclosed between the Lorenz curve and the line of complete equality (OMQ), expressed as a ratio of the area of the triangle (OPQ). This measure owes its discovery to the work of Corrado Gini in several articles published in 1912.[13]

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[13]Hainsworth, G.B., "The Lorenz Curve As a General Tool of Economic Analysis," Economic Record, September 1964, p. 429.

Use of the Lorenz type diagram along with the concentration ratio has led Mahalanobis to the use of the concentration curve principle to compute an index of concentration.[14] Adapted to this analysis the concentration curve measures the percentage of countries along one axis against the corresponding lowest percentage of gross national product, exports or imports on the other axis. Thus the curve itself is absolutely independent of units of money or of quantity and is readily comparable with concentration curves for different groups in different time periods.

For this analysis the whole distribution of k countries gross national products, exports and imports is taken. Let f_j denote the countries and c_j the gross national product, exports and imports of these f_j countries, $(j = 1, 2, \ldots \ldots k)$. Let P_j and Q_j be the proportions of countries and total gross national products, exports or imports in the jth class respectively.

Then
$$P_j = \frac{f_j}{N} ; \quad Q_j = \frac{c_j}{E}$$

where $\sum f_j = N$; $\sum c_j = E$ which are respectively the total number of countries and the total gross national products, exports or imports in the entire population or world. Let p_i and q_i be the cumulative proportions

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[14]Murti, V.N. and Pillai, K.N.C., "Distribution of Population By Expenditure Classes," Central Statistical Organization, September 1960.

defined as

$$p_i = \sum_{k=1}^{i} P_k \quad ; \quad q_i = \sum_{k=1}^{i} Q_k.$$

The set of points (p_i, q_i) together with $(0,0)$ and $(1,1)$ determines the concentration curve of the total gross national products, exports, or imports. The index of concentration is approximately given by

$$I = 1 - \sum_{i=0}^{k} (p_i - p_{i-1})(q_i + q_{i-1}).$$

This is the procedure followed for all calculations of inequality throughout this paper.

CHAPTER II

CHANGES IN INEQUALITY OF THE WORLD
DISTRIBUTION OF GROSS NATIONAL PRODUCT
EXPORTS, IMPORTS AND TRADE, 1950-1962

Economic progress among nations denotes economic growth.
All nations seek to obtain a larger amount of goods and services
for their growing populations. This larger amount of goods is
usually the result of increased production supplemented by in-
ternational trade.

International trade has made a tremendous contribution to
the development of all countries. It enables each country to
specialize and to export those things that it can produce
cheaper, in exchange for goods which other countries may have
a comparative advantage in producing. This tends to increase
the goods and services available to the people within those
countries, along with increasing national income and hopefully
equalizing the living standards. It is this equality of income
and trade that is the major concern of this paper. The major
interest of this chapter is the changes in inequality of the
world distribution of gross national product, exports, imports
and total trade for the period, 1950-1962.[15]

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[15]The use of the word world distribution seemed justified,
since the eighty-five countries in the study contains the major
portion of world income and trade.

Trends in the Volume of Trade

Gross National Product and Population

Examination of the statistics shows that the world economy has experienced substantial growth. Table 1 contains indices showing the growth of trade, income and population.[16] The total

TABLE 1. -- The secular trend in the volume of trade, gross national product and population (1950=100)

	1950	1954	1958	1962
Total Trade	100	125	159	207
Total GNP	100	119	138	160
Total Population	100	104	112	120

volume of trade of the eighty-five free market countries examined, more than doubled over the thirteen year period 1950 to 1962. Over this period total trade, which is the sum of exports and imports, rose 6.2 percent a year. During this same period gross national product rose 4.0 percent a year, while population was growing at the rate of 1.5 percent a year. These facts give a rough indication that there has been substantial progress made

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[16] The source of all the data used throughout this report was the <u>United Nations Yearbook of National Accounts Statistics</u>, (various issues). The data was then converted into United States dollars at 1960 prices.

in the world economy both with respect to income and trade.
However, further insight to the situation can be gained by examin-
ing the distribution of gross national product and trade among
the countries.

Distribution of Gross National Product

Each country's share of world gross national product,
exports, imports and total trade was taken and arranged in as-
cending order and grouped by quintiles (Table 3). This was done
for the years 1950, 1954, 1958 and 1962. Since the complete
analysis of this chapter is based on the ascending cumulative
distributions of gross national products, exports, imports and
total trade grouped by quintiles of countries, it first becomes
advantageous to consider the composition of these quintiles.
This is important for purposes of comparison. It would facili-
tate comparison if the countries comprizing the lowest quintile
of gross national product, exports, imports or trade could con-
sistently be classified as one type of country.

Computation of the rank correlation coefficients between
gross national products and exports, imports and total trade are
shown in Table 2. The high rank correlation coefficients obtained
indicates that there is a close association between countries
with a large gross national product and countries with large
exports, imports, or total trade over this period. Given this
and assuming that generally countries with a high gross national
product have the higher per capita products, comparisons can be
made differentiating to some degree between the developed and less

TABLE 2. -- Rank Correlations between gross national product and exports, imports and total trade.

	GNP/Exports	GNP/Imports	GNP/Total Trade
1950	.938	.940	.950
1954	.920	.954	.949
1958	.932	.946	.947
1962	.934	.958	.947

developed countries. This would seem particularly true in reference to comparisons of the top and lowest quintiles of countries.

Examination of the statistics for gross national product in Table 3 reveals some interesting facts. The countries making up the lowest quintile are those with the lowest 20 percent of gross national product. These countries had 0.41 percent of the total gross national product in 1950 and 0.42 percent in 1962. This means that the lowest quintile of countries has maintained their share of gross national product over the period. The second quintile of countries share of world gross national product increased from 0.95 percent in 1950 to 1.18 percent in 1962. The third quintiles share rose, as did the fourth quintiles share of gross national product. The rise in the share of world gross national product of the four lowest quintiles of countries was at the expense of the top quintile of countries. This clearly indicates that there has been a slight decline in inequality among countries in the overall distribution of gross national product.

TABLE 3. -- Distribution of world gross national products,
exports, imports and total trade by quintiles of countries.[a]

SHARES BY PERCENTAGE

	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Top quintile
1950					
GNP	.41	.95	2.95	7.96	87.73
Exports	.90	1.91	6.82	14.07	76.30
Imports	.87	2.38	6.64	15.35	74.76
Total Trade	.93	2.31	6.74	14.73	75.29
1954					
GNP	.39	1.07	3.06	8.15	87.33
Exports	.86	1.88	6.36	13.42	77.48
Imports	1.10	2.96	6.79	14.40	74.75
Total Trade	1.01	2.47	6.58	13.90	76.04
1958					
GNP	.39	1.10	2.87	8.04	87.60
Exports	.74	1.92	5.58	12.15	79.61
Imports	.99	2.46	6.51	12.90	77.14
Total Trade	.86	2.28	6.09	12.41	78.36
1962					
GNP	.42	1.18	2.98	8.41	87.01
Exports	.95	2.21	5.60	14.08	77.16
Imports	1.14	2.70	6.30	14.13	75.73
Total Trade	.95	2.37	5.64	13.50	77.54

[a]Source: Derived from Appendices I and II.

Visual evidence of this decline in inequality can be seen from examining Figure 2 of the concentration curve in Plate I. Figure 2 shows that the four lowest quintiles of countries had a larger share of the gross national product in 1962, while the top quintiles share was slightly less.

A more refined quantitative measure of the changes in inequality can be made through the use of the index of concentration. Table 4 contains the indices of concentration for the world distribution of gross national product, exports, imports and total trade.

TABLE 4. -- Index of concentration for the world distribution of gross national product, exports, imports and trade.[a]

	GNP	Exports	Imports	Total Trade
1950	.846	.730	.716	.721
1954	.842	.736	.708	.720
1958	.842	.749	.726	.736
1962	.836	.739	.722	.729

[a]Source: Derived from Appendix II.

EXPLANATION OF PLATE I

Fig. 2. The lower part contains the
         concentration curves for the
         world distribution of gross
         national product for 1950
         and 1962. The upper part
         contains the concentration
         curves for the world distri-
         bution of total trade for
         1950 and 1962.

Fig. 3. The lower part contains the
         concentration curves for the
         world distribution of exports
         for 1950 and 1962. The
         upper part contains the con-
         centration curves for the
         world distribution of imports
         for 1950 and 1962.

PLATE 1
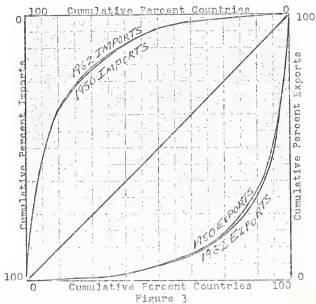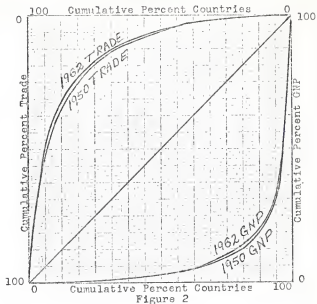
Figure 2

Figure 3

The concentration index decreases from 0.846 in 1950 to 0.836 in 1962. The general trend over the thirteen year period can be seen in Figure 4. It is clear that there hasn't been an
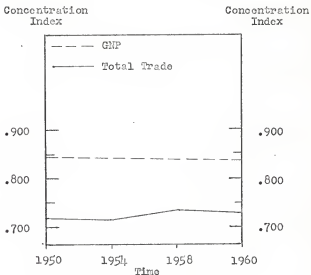

Fig. 4. -- Trends in the in-
equality of gross national
products and total trade for
1950-1962.

increase in equality in the distribution of gross national product. In fact there has been a slight downward trend in inequality.

Distribution of Exports and Imports
and Total Trade

The downward trend in overall inequality which was pre-
sent in the distribution of gross national product was not pre-
sent in the distribution of trade. However, there was no
significant increase in inequality in the distribution of trade.
In fact, the two lowest quintiles of countries increased their
percentage share of trade slightly over the thirteen years,
(Table 3). The third and fourth quintiles experienced a
decline in their percentage share of trade over this period.
The most significant change was in the top quintile, which
increased its share from 75.29 percent in 1950 to 77.54 percent
in 1962. Visually this can be seen from viewing the concentra-
tion curves in Figure 2. The index of concentration (Table 4)
increases from .721 in 1950 to .729 in 1962. The trend in
inequality for the distribution of trade can be seen in Fig-
ure 4. This reveals that there has been little change over the
thirteen year period.

The trend and pattern of trade becomes clearer when exam-
ining the distribution of exports and imports of each quintile.
Table 3 shows that the percentage of exports and imports for both
of the lower quintiles increased, but the percentage increase
in imports was larger. The third quintile experienced a decline
in percentage of both exports and imports, but there was a
greater decline in the percent of exports. The fourth quintile
held a constant percentage of exports but had a decrease in the

share of imports from 15.35 percent in 1950 to 14.13 percent in
1962. The top quintile increased its percentage of both exports
and imports.

Visual evidence of these changes in the distribution of
both exports and imports can be seen in Figure 3. As a result
of these changes the index of concentration increased slightly
from .730 and .716 in 1950 to .739 and .722 in 1962 for exports
and imports respectively, (Table 4). However, as explained
above these changes weren't at the expense of the two lowest
quintiles of countries in either exports or imports. Since it
has been shown that the total volume of trade, exports and
imports increased and that the lower quintiles maintained and
even increased their share of the total trade, exports and
imports, then it follows that there has been no deterioration
in the shares of trade, exports, and imports going to the two
lowest quintiles. This far only the overall distributions of
shares of total gross national product, exports and imports has
been considered. To examine the importance of trade in the
world economy it becomes necessary to relate it to some form of
economic activity.

International Trade and Its
Importance in Economic Activity

Table 1 shows that an increase has taken place in the total
volume of trade. However, to obtain the true character of this
increase in the volume of trade, it becomes necessary to make
a comparison with some phase of economic activity such as total

gross national product. This gives an idea of the importance of international trade and whether countries are becoming more or less independent in the world economy.

Table 5 shows total world trade as a proportion of total world gross national product. It is clear that, along with an

TABLE 5. -- Total world trade as a proportion of total world gross national product.[a]

	1950	1954	1958	1962
Ratio of total trade to GNP	19.5%	20.7%	22.8%	24.8%

[a]Source: Derived from Appendix I.

increasing total volume of trade, there has been an increase in the importance of trade. Total trade as a proportion of total gross national product increased from 19.5 percent in 1950 to 24.8 percent in 1962.

A more refined comparison can be made by examining exports, imports and total trade as a proportion of gross national product of each quintile of the countries. This has been done in Table 6.

Table 6 shows that the pattern of increasing importance of trade to gross national product is true for each quintile of countries. It also shows that the ratio of trade to gross national product is largest for the countries in the lowest quintile and decreases slightly for each higher quintile. This means that trade has become increasingly more important to the

TABLE 6. -- Exports, imports and total trade expressed as a proportion of gross national product of each quintile of countries.[a]

	SHARES BY PERCENTAGE				
	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Top quintile
Ratio to GNP of					
1950					
Exports	21.6	19.7	22.7	17.4	8.5
Imports	20.5	24.2	21.7	18.6	8.2
Total Trade	44.2	47.4	44.5	36.1	16.7
1954					
Exports	23.0	18.3	21.7	17.2	9.3
Imports	29.0	28.4	22.8	18.2	8.8
Total Trade	53.6	47.8	44.4 .	35.3	18.0
1958					
Exports	21.6	19.8	22.1	17.2	10.3
Imports	28.9	25.4	25.8	18.2	10.0
Total Trade	50.2	47.2	48.3	35.1	20.4
1962					
Exports	27.9	23.1	23.2	20.7	10.9
Imports	33.9	28.5	26.4	21.0	10.8
Total Trade	56.2	49.9	47.0	39.9	22.1

[a]Source: Derived from Appendices I and II.

the countries in the lower quintiles themselves. However, this doesn't mean that the countries in the lower quintiles have experienced a larger absolute share of total trade. Table 7 gives the secular trend in the absolute value of trade, exports and imports for each quintile over the period, 1950-1962.

TABLE 7. -- Secular trend in absolute value of trade, exports and imports for each quintile.

Trade	(1950 = 100)	
	1950	1962
Lowest quintile	100	214
Second quintile	100	214
Third quintile	100	175
Fourth quintile	100	192
Top quintile	100	215
Exports		
Lowest quintile	100	218
Second quintile	100	239
Third quintile	100	169
Fourth quintile	100	206
Top quintile	100	209
Imports		
Lowest quintile	100	278
Second quintile	100	240
Third quintile	100	201
Fourth quintile	100	195
Top quintile	100	215

The absolute value of trade of the two lowest quintiles increased 2.14 times while the top quintile increased 2.15 times over the thirteen years. This indicates that the lowest and highest quintiles has maintained a constant share of trade over the period. This tends to confirm investigations made earlier

indicating the percentage shares of the highest and lowest quintiles has remained fairly constant.

The absolute value of trade of the third and fourth quintiles increased 1.75 and 1.92 times respectively. This is compatible with earlier evidence indicating that the gains of the lowest, second and top quintiles was at the expense of the third and fourth quintiles.

The countries in the lowest quintile had a ratio of exports to gross national product of 21.6 percent in 1950, while this same ratio for 1962 was 27.9 percent, (Table 6). This indicates that exports as a proportion of gross national product has increased; however, this same comparison for imports shows that imports have increased even more and is a larger proportion of gross national product than exports. Table 7 indicates that the absolute value of exports increased 2.18 times, while imports increased 2.78 times. Thus, it is clear that imports is a larger proportion of gross national product than exports and that this increase in imports is the reason the lowest quintile has maintained a constant share of trade over the period. However, it is important to note that this diversion between exports and imports was a result of a faster increase in imports and not a decrease in exports. The fact that the major increase in imports was in the lowest quintile may indicate the importance of imports to the development process. This same pattern was also present in the third quintile of countries. The top and second quintiles maintained a fairly

constant share of exports and imports, while the fourth quintile
experienced a decline in the share of imports relative to
exports.

The implications of this analysis would indicate that the
distribution of trade, exports and imports has exhibited no real
unfavorable changes towards the less developed countries over
the 1950-1962 period and has in fact exhibited a rather constant
change.

CHANGES IN INEQUALITY OF GROSS NATIONAL
PRODUCT, EXPORTS, IMPORTS AND TOTAL
TRADE FOR THE DEVELOPED AND LESS
DEVELOPED COUNTRIES

Having examined the overall distributions of gross national
product, exports, imports and trade by quintiles of countries,
attention is now focused on a more explicit division. The
countries were grouped into a group of developed and a group
of less developed countries.[17] Appendix III contains a list
of this division.

Developed Versus the Less Developed Countries

Table 8 gives the percentages of gross national product,
exports, imports and total trade represented by the corresponding percentage of developed and less developed countries. The
less developed countries represented 70.4 percent of the countries in 1950 and held 14.5 percent of the gross national product, while in 1962 the less developed countries represented
72.0 percent of the countries and held 15.9 percent of the gross

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[17]The division between developed and less developed
countries was taken from: James C. Ingram, International Economic Problems (New York: John Wiley & Sons, 1966) p. 75.

TABLE 8. -- Distribution of gross national product, exports,
imports and total trade between the developed and less devel-
oped countries.[a]

	Developed Countries	Less Developed Countries
Percentage of total:		
1950 Countries[b]	29.6	70.4
GNP	85.5	14.5
Exports	77.8	22.2
Imports	77.0	23.0
Total Trade	77.4	22.6
1954 Countries	27.6	72.4
GNP	84.1	14.9
Exports	78.5	21.5
Imports	76.4	23.6
Total Trade	77.4	22.6
1958 Countries	25.0	75.0
GNP	82.7	17.3
Exports	78.5	21.5
Imports	75.6	24.4
Total Trade	77.0	23.0
1962 Countries	28.0	72.0
GNP	84.1	15.9
Exports	80.4	19.6
Imports	79.7	20.3
Total Trade	80.0	20.0

[a]Source: Derived from Appendices II and III.
[b]The reason for the variation in the percentage of devel-
oped and less developed countries each year is that there were
a few countries for which data wasn't available every year.

national product. The fact that the percentage of the loss
developed countries changes makes comparison difficult. However,
comparisons can readily be made by using the concentration curve
and the index of concentration.

Figure 5 of Plate II shows the distribution of gross na-
tional product and trade between the developed and the less de-
veloped countries for 1950 and 1962. This visual comparison
coincides with the results of the index of concentration in
Table 9, which shows an index of .559 and .561 in 1950 and 1962,
respectively. This means that the inequality in the distribu-
tion of gross national product was not significantly greater
in 1962 than it was in 1950. However, the index of concentra-
tion for 1954 and 1958 shows that there was a slight increase
in inequality within this thirteen year period which decreased
by 1962.

TABLE 9. -- Index of concentration for the distribution of
gross national product, exports, imports and total trade be-
tween the developed and less developed countries.

	GNP	Exports	Imports	Total Trade
1950	.559	.482	.474	.478
1954	.575	.509	.488	.498
1958	.577	.535	.506	.520
1962	.561	.524	.517	.520

Figure 5 shows that the inequality in the distribution of
total trade has increased slightly over the period. The index

EXPLANATION OF PLATE II

Fig. 5.   The lower part contains the
          concentration curves for the
          distribution of gross national
          product between the developed
          and less developed countries
          for 1950 and 1962.   The
          upper part contains the con-
          centration curves for the
          distribution of total trade
          between the developed and
          less developed countries for
          1950 and 1962.

Fig. 6.   The lower part contains the
          concentration curves for the
          distribution of exports
          between the developed and less
          developed countries for 1950
          and 1962.   The upper part con-
          tains the concentration curves
          for the distribution of imports
          between the developed and less
          developed countries for 1950
          and 1962.

PLATE II
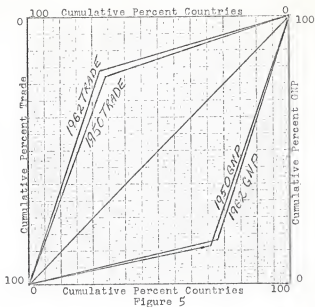
Figure 5
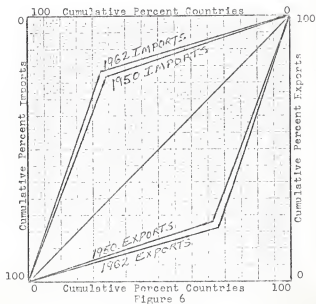
Figure 6

of concentration shows that there has been a gradual upward trend in inequality for the distribution of trade.

Figure 6 shows the distribution of exports and imports between the developed countries and the less developed countries. It is visually evident and is quantitatively substantiated by the indices of concentration that there has been a slight increase in inequality in the distributions of exports and imports.

Division of Countries by Per Capita Incomes

A more specific analysis between the developed and less developed countries was made by grouping the countries according to per capita income. The countries were grouped according to their per capita incomes in 1961.[18] Group 1 consisted of countries with a per capita income of less than $100, group 2 of countries with a per capita income of $100 - $250, group 3 of countries with a per capita income of $250 - $500, group 4 of countries with a per capita income of $500 - $1,000, group 5 of countries with a per capita income of $1,000 - $2,000, and group 6 of countries with a per capita income of more than $2,000. Appendix IV contains a list of the countries in each group.

Table 10 gives the distribution of gross national product, exports, imports and total trade for the per capita income

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[18] The per capita income classification was adapted from: C. Wilcox, W. Weatherford and H. Hunter, Economics of the World Today, (New York, Harcourt, Brace and Co., 1962) p. 16-18.

TABLE 10. -- [dis]tribution of gross national product, exports, imports and t[ot]al trade between countries grouped by per capita income classes.[a]

|	PER CAPITA INCOME GROUPS					
	Less $100 Group I	$100 $250 Group 2	$250 $500 Group 3	$500 $1,000 Group 4	$1,000 $2,000 Group 5	Over $2,000 Group 6
Percentage of total:						
1950						
Countries	16.9	28.2	19.7	15.5	16.9	2.8
GNP	4.9	3.1	6.9	6.6	24.2	54.3
Exports	4.9	6.7	8.6	11.7	40.8	27.2
Imports	4.6	7.2	8.2	13.6	40.3	26.0
Total Trade	4.8	6.9	8.4	12.7	40.6	26.6
1954						
Countries	17.1	30.3	19.7	14.5	15.8	2.6
GNP	6.4	3.7	7.6	6.8	24.0	52.5
Exports	6.4	5.4	9.2	12.6	41.9	24.8
Imports	7.5	5.1	9.2	13.4	39.8	25.0
Total Trade	7.0	5.1	9.2	13.0	40.8	24.9
1958						
Countries	21.4	28.6	20.2	13.1	14.3	2.4
GNP	5.4	4.3	8.6	7.1	24.2	50.3
Exports	4.5	6.4	10.1	13.7	41.4	23.9
Imports	4.9	8.0	9.9	13.6	39.0	24.5
Total Trade	4.7	7.2	10.0	13.6	40.2	24.2
1962						
Countries	16.0	29.3	21.3	14.7	16.0	2.7
GNP	4.6	3.7	9.8	7.4	24.6	49.9
Exports	3.0	5.8	11.1	15.5	41.5	23.1
Imports	3.8	6.3	10.8	15.4	41.8	21.9
Total Trade	3.4	6.0	11.0	15.5	41.7	22.4

[a]Source: Derived from Appendices II and IV.

groups. The concentration curves for these distributions are
shown in Figures 7 and 8 of Plate III. By examining these con-
centration curves it is possible to get an idea of the changes
in inequality which have taken place between the groups over
the period, (1950-1962).

TABLE 11. -- Index of concentration for the distribution of
gross national product, exports, imports and total trade for
countries grouped by per capita income classes.

	GNP	Exports	Imports	Total Trade
1950	.712	.507	.504	.505
1954	.703	.541	.525	.533
1958	.695	.559	.535	.547
1962	.685	.539	.527	.532

Table 11 shows that the index of concentration for the
distribution of gross national product has decreased from .712
in 1950 to .685 in 1962. This substantiates the earlier find-
ing of a downward trend in inequality when the countries were
grouped by quintiles. Figure 7 shows that the major reason for
this decrease in inequality is due to the decline in the per-
centage share of gross national product held by the countries
in group 6, which are the United States and Canada.

There was a slight increase in inequality in the distribu-
tion of exports, imports and trade, (Figure 8). Countries with
a per capita income of less than $100 represented 16.9 percent
of the countries and held 4.8 percent of the total trade while
in 1962, 16.0 percent of the countries held only 3.4 percent

EXPLANATION OF PLATE III

Fig. 7.   The lower part contains the
          concentration curves for 1950
          and 1962 for the distribution of
          gross national product of the
          countries grouped by per capita
          income groups. The upper part
          contains the concentration curves
          for 1950 and 1962 for the distri-
          bution of total trade of the
          countries grouped by per capita
          income groups.

Fig. 8.   The lower part contains the
          concentration curves for 1950
          and 1962 for the distribution of
          exports of the countries grouped
          by per capita income groups. The
          upper part contains the concentra-
          tion curves for 1950 and 1962 for
          the distribution of imports of the
          countries grouped by per capita
          income groups.

PLATE III

36

Figure 7

Figure 8
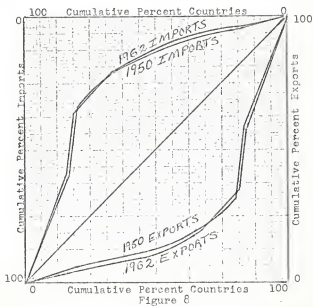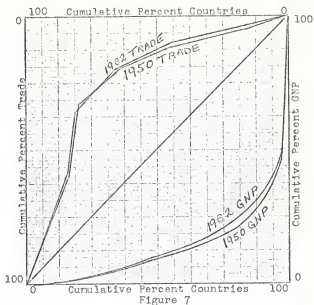
of the total trade. Thus while the earlier study indicated
the share of trade of the lowest quintile was constant, this
is not the case for the countries in group 1. An examination
of the composition of total trade shows that group 1 repre-
sents 16.9 percent of the countries and held 4.9 and 4.6 per-
cent of the exports and imports respectively in 1950. In
1962, group 1 represented 16.0 percent of the countries, but
held only 3.0 and 3.8 percent of the exports and imports res-
pectively. Thus it would seem that concern over a decline in
exports is justified. It is difficult to evaluate the effects
of the decline in the percentage share of imports. This
decline in imports could mean there had been a major emphasis
on the use of import substitution by the countries. However,
any extensive development process usually requires large
amounts of imports on the part of the less developed countries.
Therefore, it would seem that the decline in imports represents
a serious obstacle to furthering development of these countries
in group 1 with per capita incomes of less than $100.

This same pattern of a decline in the share of trade is
also true for the countries with a per capita income of $100
to $250. In this case in 1950, group 2 represented 26.2 per-
cent of the countries which held 6.9 percent of the trade.
However, in 1962 a larger percent of countries had a smaller
share of total trade.

The other significant change in Table 10 occurred in group
6 which is composed of the United States and Canada. Group 6

represented 2.8 percent of the countries which held 26.6 percent of total trade in 1950. In 1962, group 6 represented 2.7 percent of the countries but held only 22.4 percent of the total trade. The United States exports decreased from 20.3 percent of the total exports in 1950 to 17.6 percent in 1962. Imports decreased from 19.4 percent of the world total in 1950 to 16.6 percent in 1962.[19] Canada's share of total exports and imports declined from 6.9 and 6.7 percent in 1950 to 5.4 and 5.3 percent respectively in 1962.

Groups 3 and 4 experienced an increase in their percentage share of total trade. These two groups received a constantly increasing percentage of the total trade in each of the four years examined, (Table 10). The percentage share of group 5 remained relatively constant over the period.

The overall results of the above changes led to a small increase in the index of concentration. This would indicate that the less developed countries have experienced a slightly smaller share of world trade. However, the change is very slight and therefore, doesn't substantiate the view that the divergency between the developed and less developed countries is rapidly widening.

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[19]This information is contained in Appendix II.

Comparison of the United States
With Each of the Per Capita
Income Groups

The distribution of gross national product, exports,
imports, and total trade of the per capita income groups of
countries, except for group 6 of which the United States was a
part, was compared to the United States. This gives an indica-
tion of the changes in inequality between the per capita income
groups and the United States. A decrease in inequality with
respect to income or trade would indicate a convergence of the
economy of the United States and the other group. It is assumed
that this would be desirable especially for the groups with low
per capita incomes.

Table 12 gives the index of concentration for the distri-
bution of gross national product, exports, imports and total
trade for the comparison of the United States to each of the
other groups. The inequality in the distribution of gross
national product between the United States and the other groups
decreased over the 1950-1962 period in all groups except group 1.
The inequality between the United States and group 1 increased
slightly. These changes can be seen by examining the concentra-
tion curves of Plate IV.

The inequality in the distribution of total trade between
the United States and groups 3, 4, and 5 decreased over the
thirteen years. The inequality between the United States and
group 2 remained fairly constant. The inequality between the
United States and group 1 increased.

TABLE 12. -- Index of concentration for the distribution of
gross national product, exports, imports and total trade com-
paring the United States with each of the other groups.[a]

	U.S. and Group 1	U.S. and Group 2	U.S. and Group 3	U.S. and Group 4	U.S. and Group 5
	Distribution of Gross National Product				
1950	.828	.894	.814	.802	.600
1954	.830	.719	.803	.795	.594
1958	.843	.876	.788	.785	.581
1962	.833	.881	.766	.779	.577
	Distribution of Total Trade				
1950	.729	.693	.635	.527	.251
1954	.655	.742	.606	.505	.235
1958	.741	.676	.590	.489	.235
1962	.756	.695	.550	.442	.214
	Distribution of Exports				
1950	.729	.703	.635	.551	.255
1954	.672	.744	.607	.513	.230
1958	.748	.698	.585	.486	.227
1962	.776	.709	.554	.449	.221
	Distribution of Imports				
1950	.730	.682	.635	.504	.247
1954	.638	.740	.604	.496	.240
1958	.735	.660	.594	.491	.243
1962	.737	.681	.547	.435	.207

[a]Source: Derived from Appendices II and IV.

EXPLANATION OF PLATE IV

Fig. 9.   The lower part of Figure 9 contains the
          concentration curves for 1950 and 1962 for
          the distribution of (GNP) gross national pro-
          duct between the United States and group 1.
          The upper part contains the same information
          for the distribution of trade.

Fig. 10. The lower part of Figure 10 contains the
          concentration curves for 1950 and 1962 for the
          distribution of GNP between the United States
          and group 2. The upper part contains the same
          information for the distribution of trade.

Fig. 11. The lower part of Figure 11 contains the
          concentration curves for 1950 and 1962 for the
          distribution of GNP between the United States
          and group 3. The upper part contains the same
          information for the distribution of trade.

Fig. 12. The lower part of Figure 12 contains the
          concentration curves for 1950 and 1962 for the
          distribution of GNP between the United States
          and group 4. The upper part contains the same
          information for the distribution of trade.

Fig. 13. The lower part of Figure 13 contains the
          concentration curves for 1950 and 1962 for the
          distribution of GNP between the United States
          and group 5. The upper part contains the same
          information for the distribution of trade.

PLATE IV
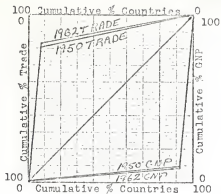
Figure 9
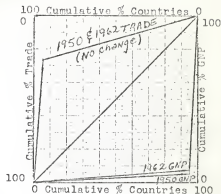
Figure 10
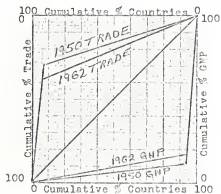
Figure 11
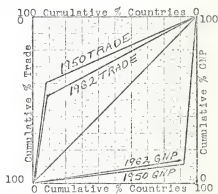
Figure 12
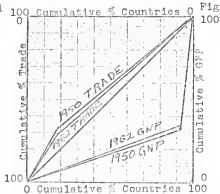
Figure 13

The inequality in the distribution of exports and imports between the United States and each of the other groups decreases, with the exception of group 1, for the period, 1950-1962. The inequality between the United States and group 1 with respect to exports increases slightly. The implications of these results indicate that there has been a convergence between the economies of the United States and each of the other groups with the exception of group 1.

To summarize this chapter it is evident from viewing the concentration curves and indices that there has been no increase in inequality in the distribution of gross national product between the developed and less developed countries under any method of grouping. On the basis of the concentration curves and indices it was concluded that there was not sufficient evidence to substantiate the view that there is an increasing divergency between the developed and less developed countries with respect to the distribution of trade.

CHAPTER IV

CHANGES IN INEQUALITY OF GROSS
NATIONAL PRODUCT, EXPORTS, IMPORTS
AND TOTAL TRADE AMONG REGIONS OF THE WORLD

A procedure of analysis, often followed for making com-
parisons, is to discuss countries by regions of the world.
Therefore, it would seem beneficial to examine these regions
and the inequality and changes in inequality which have occurred
in the distribution of gross national product, exports, imports
and total trade.

The regions examined were the English and European speak-
ing countries - group 1; the Latin American countries - group 2;
the Middle Eastern countries - group 3; the Asian countries -
group 4; and the African countries - group 5.[19] A list of the
countries in each group is contained in Appendix IV.

Table 13 gives the distribution of gross national product,
exports, imports and total trade for the regions. By examining
the indices of concentration it is possible to get an idea of
the changes in inequality which have taken place between the
regions over the period, (1950-1962). The concentration curves
for these distributions are shown in Plate V.

_____

[19]The country classification of these groups was taken
from: (C. Wilcox, W. Weatherford and H. Hunter, op. cit.).

TABLE 13. -- Distribution of gross national product, exports, imports and total trade between countries grouped by regions of the world.[a]

	English & European Group 1	Latin America Group 2	Middle East Group 3	Asia Group 4	Africa Group 5
REGIONS OF THE WORLD					
Percentage of total:					
1950					
Countries	32.4	32.4	11.3	12.6	11.3
GNP	85.0	5.4	1.4	7.4	0.8
Exports	78.6	8.9	2.9	7.4	2.2
Imports	76.7	9.3	4.0	6.1	1.9
Total Trade	78.6	9.1	3.4	6.8	2.1
1954					
Countries	30.3	30.3	13.1	14.5	11.8
GNP	83.5	5.4	1.7	8.5	0.9
Exports	78.6	7.9	2.9	6.3	2.2
Imports	77.0	9.1	3.7	7.7	2.4
Total Trade	77.9	8.5	3.3	8.0	2.3
1958					
Countries	27.4	28.6	13.0	15.5	15.5
GNP	81.8	5.9	2.2	9.1	1.0
Exports	77.5	8.2	3.4	8.8	2.1
Imports	75.8	9.0	4.4	8.5	2.3
Total Trade	76.7	8.6	3.9	8.6	2.2
1962					
Countries	30.7	29.3	12.0	14.7	13.3
GNP	82.1	5.8	1.6	9.6	0.9
Exports	79.0	7.9	2.1	9.0	1.9
Imports	78.5	7.5	2.8	9.3	1.8
Total Trade	78.8	7.7	2.4	9.2	1.9

[a]Source: Derived from Appendices II and V.

Table 14 shows that the index of concentration for the
distribution of gross national product was the same in 1962 as
it was in 1950. However, the index shows a gradual increase in
inequality for 1954 and 1958, which had declined by 1962.
Although there probably existed a slight increase in inequality
for this interperiod, the increase was not as large as the index
indicates. The reason for this is that the distribution for 1958
included a larger number of countries than the distribution for
1950. These additional countries were either newly formed or
in general the poorer countries and had only recently made data
available. If data for these countries had been included in the
1950 distribution, it is doubtful whether there would have been
any significant increase in inequality in the interperiod. As
explained earlier, this tends to make group 1, which has over

TABLE 14. -- Index of concentration for the distribution of
gross national product, exports, imports and total trade for
countries grouped by regions of the world.[a]

	GNP	Exports	Imports	Total Trade
1950	.563	.434	.468	.464
1954	.575	.516	.474	.481
1958	.591	.541	.498	.530
1962	.563	.525	.519	.522

[a]Source: Derived from Appendices II and V.

80.0 percent of the total gross national product, a smaller
percent of the total countries but only slightly alters the

EXPLANATION OF PLATE V

Fig. 14.   The lower part of Figure 14
contains the concentration
curves for 1950 and 1962 for
the distribution of gross
national product between the
regions of the world. The
upper part contains the same
information for the distri-
bution of trade.

Fig. 15.   The lower part of Figure 15
contains the concentration
curves for 1950 and 1962
for the distribution of
exports between the regions
of the world. The upper
part contains the same
information for the distri-
bution of imports.

PLATE V
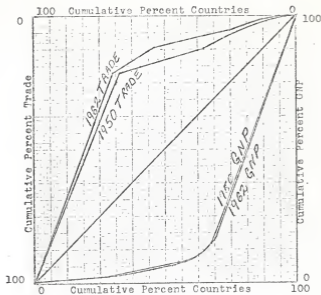
Figure 14
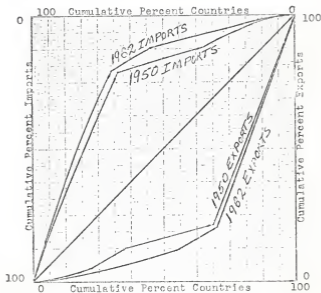
Figure 15

percentage of gross national product held. The result is an
exaggeration of the actual inequality when comparing the 1958
distribution to 1950.

A close examination of Figure 14 shows that in 1962 there
was a tendency towards an increase in inequality in the distri-
bution of gross national product due to the English-European
countries, which was balanced out by a tendency toward a
decrease in inequality by the Latin American countries. There-
fore, there was no change in the concentration index over the
period for 1950 and 1962.

The index of concentration for the distribution of total
trade, exports and imports shows a slight increase in inequal-
ity. Here again the index is overstated for the year 1958.
The overall increase is apparent in Figure 14 where the con-
centration curve shows greater inequality in all cases. Fig-
ure 15 shows the concentration curves for the distribution of
exports and imports. These curves reflect the increase in in-
equality which was shown in the distribution of total trade.
The concentration indices increased from .434 in 1950 to .525
in 1962 for exports. The concentration indices increased from
.468 in 1950 to .519 in 1962 for imports.

Comparison of the English Speaking
and European Countries with each
of the Other Regions

The distribution of gross national product, exports,
imports and total trade of the regions was compared to the
English Speaking and European Countries for the period, (1950-1962).
This gives an indication of the changes in inequality between the
English Speaking and European countries and the other regions.
Table 15 gives the indices of concentration for this compari-
son of gross national product, exports, imports and total trade.

The indices of concentration for the distribution of gross
national product shows that there was very little tendency
towards an increase in inequality between the English-European
countries and all other groups. There was a slight increase in
inequality between the English-European countries and Africa.
The relation of the English-European countries to the Middle
Eastern and Asian countries was about the same over the period.
The relative good performance of the Asian countries was due to
the high large values of gross national product for India
and Japan.

In the distribution of total trade there was a small
tendency towards increasing inequality between the English-
European countries and the Middle Eastern and African countries.
There was very little change in the Latin American countries
and a slight increase in inequality between the English-European

TABLE 15. -- Index of concentration for the distribution of
gross national product, exports, imports and total trade com-
paring the English Speaking and European countries (Group 1)
with each of the other groups.[a]

	Group 1 and Group 2	Group 1 and Group 3	Group 1 and Group 4	Group 2 and Group 5
	Distribution of Gross National Product			
1950	.441	.242	.201	.249
1954	.439	.284	.231	.271
1958	.443	.298	.261	.349
1962	.423	.262	.219	.292
	Distribution of Total Trade			
1950	.396	.216	.202	.232
1954	.402	.262	.231	.253
1958	.400	.276	.260	.333
1962	.400	.251	.220	.270
	Distribution of Exports			
1950	.398	.333	.195	.230
1954	.409	.267	.228	.254
1958	.416	.282	.259	.334
1962	.398	.255	.222	.280
	Distribution of Imports			
1950	.394	.200	.209	.234
1954	.394	.256	.233	.251
1958	.405	.269	.260	.331
1962	.401	.247	.218	.280

[a]Source: Derived from Appendices II and V.

countries and the Asian countries. This same pattern is present in the distributions for exports and imports with no other significant variations.

The major conclusions are that the slight increase in inequality in the distribution of gross national product, exports, imports and total trade compared to the English-European countries is most prevalent in the case of the African countries. There was very little change in inequality for the Asian and Middle Eastern countries with Latin America remaining fairly constant with respect to the distribution of total trade, exports and imports. Latin American countries compared to the English-European countries experienced a decline in inequality in the distribution of gross national product.

Changes in the Inequality of the
Distribution of GNP, Exports, Imports
and Total Trade Within the Regions
of the World

Each countries share of the total gross national product, exports, imports and total trade within each region was arranged in ascending order and grouped by quintiles (Table 16), for 1950 and 1962.

The top quintile of countries within the English-European group of countries experienced a decline in the percentage share of gross national product, exports, imports and total trade over the period, 1950-1962. The lowest quintile experienced an

TABLE 16. -- Distribution of gross national product, exports, imports and total trade within each group by quintiles of countries[a]

	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Top quintile
			SHARES BY PERCENTAGE		
English & European					
1950					
GNP	0.77	2.25	4.11	9.53	83.34
Exports	1.79	4.63	9.46	16.44	67.68
Imports	2.17	4.81	10.76	19.05	63.21
Trade[b]	2.16	4.54	10.30	17.54	65.46
1962					
GNP	0.80	2.41	4.68	10.20	81.91
Exports	1.66	5.26	9.79	21.36	61.93
Imports	2.17	5.49	10.15	21.61	60.58
Trade	1.91	5.40	9.95	21.48	61.26
Latin American					
1950					
GNP	1.89	2.92	4.35	17.91	72.93
Exports	2.62	4.42	6.14	20.59	66.23
Imports	2.33	3.94	6.72	22.23	64.78
Trade	2.49	4.18	6.43	21.49	65.41
1962					
GNP	1.71	3.15	5.05	17.65	72.44
Exports	2.32	4.45	7.68	23.06	62.49
Imports	2.94	4.95	9.10	25.33	57.68
Trade	2.72	4.63	8.35	24.17	60.13
Middle East					
1950					
GNP	4.71	8.12	15.82	27.38	43.97
Exports	2.47	5.77	17.08	26.03	48.65
Imports	4.78	10.27	17.49	22.92	44.54
Trade	4.46	9.50	15.54	24.23	46.27
1962					
GNP	3.50	8.20	15.03	20.77	52.50
Exports	3.84	8.68	18.44	25.97	43.07
Imports	6.16	9.76	17.83	26.93	39.32
Trade	5.19	9.27	20.86	26.89	37.79

TABLE 16. -- Continued

SHARES BY PERCENTAGE

	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Top quintile
Asian					
1950					
GNP	1.55	2.83	6.53	20.31	68.78
Exports	1.57	8.73	13.98	20.34	55.38
Imports	1.80	4.55	15.94	25.63	52.08
Trade	1.68	6.90	14.82	22.69	53.91
1962					
GNP	2.09	3.36	5.51	12.30	76.74
Exports	2.04	4.60	9.72	19.49	64.15
Imports	2.80	6.71	10.73	16.32	63.44
Trade	2.61	5.75	9.99	17.86	63.79
African					
1950					
GNP	5.46	8.98	16.48	22.50	46.58
Exports	6.05	6.51	16.56	31.95	38.93
Imports	5.18	9.63	17.52	25.68	41.99
Trade	5.85	7.97	16.77	29.08	40.33
1962					
GNP	3.01	9.55	14.84	25.86	46.74
Exports	5.34	9.40	12.39	26.36	46.51
Imports	6.21	8.68	16.10	25.61	43.40
Trade	5.78	9.04	14.22	26.00	44.96

a Source: Derived from Appendices I, II and V.
b Trade is the sum of exports and imports of goods and services.

increase from 0.77 to 0.80 percent in its share of gross national product, but experienced a decline in its share of total trade. This decrease in total trade was due to a decline in the percentage share of exports while the share of imports remained constant. However, an increase in the share of both gross national product and trade for the second, third and fourth quintiles along with a decrease in the top quintiles share resulted in a decrease in the overall inequality within the group of English-European countries. Table 17 shows the index of concentration for the distribution of gross national product, exports, imports and total trade. There is a consistent decline in inequality over the period.

The Latin American countries followed almost exactly the same pattern as the English-European countries, except that the lowest quintile of the Latin American countries increased its percentage share of total trade. However, this increase in total trade appeared to be due to an increase in imports not exports. The lowest quintile of the Latin American countries experienced a decline in its percentage share of gross national product. The overall result was a decrease in inequality within the group of Latin American countries in the distribution of gross national product, exports, imports and total trade, (Table 17).

The inequality within the group of Middle East countries decreased with respect to the distribution of exports, imports and total trade. There was an increase in inequality in the

TABLE 17. -- Index of concentration for the distribution of gross national product, exports, imports and total trade for the countries within each of the regions of the world.[a]

	English & European Group 1	Latin America Group 2	Middle East Group 3	Asia Group 5	Africa Group 5
	Distribution of Gross National Product				
1950	.784	.670	.412	.634	.408
1954	.778	.667	.435	.618	.461
1958	.757	.668	.441	.636	.501
1962	.769	.659	.459	.661	.439
	Distribution of Total Trade				
1950	.602	.606	.416	.495	.389
1954	.584	.588	.351	.509	.403
1958	.594	.599	.352	.545	.500
1962	.575	.563	.347	.580	.388
	Distribution of Exports				
1950	.620	.608	.474	.488	.379
1954	.593	.609	.418	.552	.418
1958	.599	.609	.388	.592	.500
1962	.582	.590	.395	.604	.420
	Distribution of Imports				
1950	.588	.606	.388	.513	.377
1954	.577	.575	.334	.467	.395
1958	.590	.591	.365	.513	.501
1962	.568	.536	.350	.561	.374

[a]Source: Derived from Appendices I, II and V

distribution of gross national product, which resulted from the lowest quintiles percentage share declining while the top quintiles increased, (Table 16).

The general tendency within the Asian group of countries for the distribution of gross national product, exports, imports and total trade was towards increased inequality. The lowest, second and top quintiles increased their share of gross national product, while the third and fourth quintiles experienced a decline. The result, due mainly to the large increase in the top quintiles share of gross national product, was an increase in inequality. The increase in inequality in the distribution of total trade was due mainly to the decline in percentage share of exports of the second and third quintiles.

The largest change in inequality within the African group of countries occurred in the distribution of gross national product. A large part of this increased inequality was due to the decline of the percentage share of gross national product in the lowest quintile. The inequality in the distribution of total trade and imports remained rather constant over the period. There was an increase in inequality in the distribution of exports due mainly to a decline in the percentage share of the lowest, third and fourth quintile. The top quintile experienced an increase in its percentage share of exports.

As has been generally true throughout this study there exists greater inequality in the distribution of gross national product within these regions than there was in the distribution of either exports, imports or total trade. Likewise, as would

be expected the greatest inequality existed within the English-European group of countries. The reason for this large inequality is that this group covers a wide range of countries. It includes large countries like the United States as well as smaller countries like Ireland. The inequality within this group would be reduced greatly by removing the United States from the group.

The region with the least inequality in the distribution of gross national product, exports, imports and total trade is the Middle East.

Dominance of Countries Within Each Region

Although an examination of inequality and its changes has been made, no mention has been made of the countries responsible for these changes. Some insight to this situation can be gained by examining the top four countries in each region and their share of gross national product, exports and imports over the period, 1950-1962.

The top four countries of the English-European group of countries consisted of the United States, United Kingdom, France and Germany in 1962. The only difference in 1950 was that Canada had the fourth highest percent of exports and imports. The percentage share of gross national product held by these top four countries declined from 80.9 percent to 79.4 percent. However, the decline in the percentage of exports and imports was much greater. This indicates that the pattern of dominance in the English-European group has changed very little, (Table 18).

TABLE 18. -- Changes in the share of gross national product, exports and imports of the top four countries in each group for 1950 and 1962.[a]

| | 1950 | | | 1962 | | |
| | | Top Four Countries Percentage | | | Top Four Countries Percentage | |
	GNP	Exports	Imports	GNP	Exports	Imports
Group 1	80.9	64.4	60.2	79.4	57.8	56.5
Group 2	68.1	62.5	59.2	68.2	59.6	54.1
Group 3	82.8	86.0	77.0	76.9	74.2	71.0
Group 4	91.4	75.7	77.7	87.8	81.3	77.2
Group 5	79.1	84.0	77.7	72.6	72.9	69.0

[a]Source: Derived from Appendices I, II and V.

The top four countries of the Latin American group consisted of Argentina, Brazil, Mexico and Venezuela in 1950. The only change in composition in 1962 was the replacement of Brazil by Puerto Rico for exports and imports only. There was very little change in the percentage share of gross national product held over the period. The percentage share of imports declined in 1962. Earlier indications were that Latin America and the English-European countries experienced a decrease in inequality in the distribution of gross national product. It is evident that this decrease in inequality was not at the expense of the top four countries in either group. However, a large portion of the decrease in inequality in the distribution of exports and imports can be attributed to the top four countries in both groups.

The top four Middle Eastern countries in 1950 were Algeria, Morocco, Turkey and Egypt. In 1962, Israel replaced Algeria as

the fourth country in gross national product and imports. Iraq replaced Algeria as the fourth country in exports. Their percentage share of gross national product decreased from 82.8 percent in 1950 to 76.9 percent in 1962. However, the overall inequality in the distribution of gross national product increased during this period. The decline of the top four countries percentage share of exports and imports resulted in a decrease in inequality in the distribution of exports and imports in the Middle East.

The top four Asian countries were India, Japan, Pakistan and the Phillippines for the distribution of gross national product in 1950, but Indonesia replaced the Phillippines for the fourth country in the distribution of exports and imports. The top four countries in Asia were responsible for the increase in inequality in the distribution of exports. The exports of the top four countries increased from 75.7 percent to 81.3 percent. Japan's exports increased from 26.0 percent in 1950 to 48.0 percent of the total Asian exports in 1962.

The top four African countries in 1950 were Ghana, Nigeria, Rhodesia and Nyasaland and Congo (D.R.). In 1962 Sudan replaced the Congo as the fourth country. The top four countries percentage shares in Africa declined. However, the effects of this decline have been less profound since the absolute inequality isn't too large in Africa. This means that the top four countries are not as distinctly dominant as the top four in the other groups with the possible exception of the Middle East.

SUMMARY AND CONCLUSIONS

This study set out with the object of examining the inequalities in international trade among eighty-five free market countries of the United Nations for the thirteen year period, (1950-1962). Since comparisons were involved, it became necessary to have some measure of economic activity of nations. The measure chosen, because it is the most widely used and easiest to obtain, was the gross national products of the countries. This data along with the trade data for all the countries was converted into United States dollars at 1960 prices.

It was concluded that it would be difficult to devise a complete measure of the actual inequality among nations. The Lorenz curve and the concentration ratio principle are used in this study to compare inequality among nations and changes which have occurred in inequality over a period of time.

The volume and trends in total trade, gross national product and population were examined. The world economy has exhibited substantial growth in both gross national product and total trade.

An examination of changes in inequality in the total distribution of gross national product, exports, imports and total trade was made for the period, 1950-1962. It was found that there has been no increase in inequality in the distribution of gross national product for the overall distributions of the

countries. In fact, there has been a slight decrease in inequality. The index of concentration for the distribution of total trade increases from .721 in 1950 to .729 in 1962, indicating almost no change in inequality.

The countries were divided into quintiles and attempts were made to assess the changes in inequality among the distributions of exports and imports. The slight increase in inequality in the distribution of exports and imports did not occur in the two lowest quintiles of countries. This was encouraging since a high correlation was found between countries with high incomes and trade. This finding would appear to have some implications to the developing countries.

The value of trade as a proportion of gross national product was examined and found to be an increasing ratio. The meaning of this increase can be interpreted several ways, but it would seem to imply an increasing dependence between countries of the world.

After examining the overall distributions, attention was focused on changes in inequality between the developed and less developed countries. There was no significant evidence of any increase in inequality in gross national product between the developed and less developed countries. However, there was a small increase in the index of concentration for distribution of trade between the developed and less developed countries. This would tend to indicate that there was some unfavorable changes towards the less developed countries with respect to trade.

A more explicit division of the developed and less developed countries was made by grouping them into per capita income classes. Again there was a slight downward trend in inequality between the groups in the distribution of gross national product. As before there was also a slight increase in inequality in the distribution of trade.

Each of the per capita income groups was compared to the United States. The inequality between the United States and the other groups decreased over the 1950-1962 period in all groups except the lowest per capita income group. The inequality in the distribution of total trade between the United States and per capita income groups three, four, and five exhibited a downward trend over the thirteen years. The inequality between the United States and groups one and two remained almost the same.

Since countries are often discussed in terms of regions of the world, it was felt beneficial to discuss the inequalities between and within these regions over the period, (1950-1962). The regions examined were the English-European, Latin American, Middle East, Asian and African countries. The results reveal little evidence of any increase in overall inequality in the distribution of gross national product between the regions. However, there was a slight increase in inequality in the distribution of trade.

The distribution of gross national product, exports, imports and total trade of the regions was compared to the English Speaking and European countries. There was no tendency

towards an increase in inequality between the English-European countries and the other regions, with the exception of Africa, for the distribution of gross national product. The inequality in the distribution of gross national product between the English-European countries and the Middle Eastern and Asian countries showed almost no change over the period. With respect to trade there was a greater tendency towards inequality between the English-European countries and the Middle Eastern and African countries. There was very little increase in inequality between the English-European countries and the Asian countries.

The inequality in the distribution of gross national product, exports, imports and total trade of the countries within each region was examined. The English-European countries and Latin America experienced a consistent decline in inequality for the distribution of gross national product, exports, imports and trade. The inequality within the Middle Eastern countries decreased with respect to the distribution of exports, imports and total trade but increased with respect to gross national product. The general tendency within the Asian region was for an increase in inequality in all distributions. The African countries experienced an increase in inequality especially in the distribution of gross national product and exports. One of the major consistencies for the study has been that the inequality in the distribution of gross national product has been greater than that for trade. The largest inequality within the

regions was exhibited by the English-European countries. The region with the least inequality within is the Middle East.

To examine the dominance of countries within each region the top four countries of each region were considered. In general there was very little change within the regions of the dominant countries over the period. However, the dominance of the top four countries in the Middle East and Africa was not as distinct as the other groups.

In conclusion, there is no evidence of any significant increase in inequality in the distribution of gross national product in any case. Whether it be between the developed and the less developed countries or the regions, there was no increased inequality. There was a general tendency for the inequality in the distribution of exports, imports and total trade to increase slightly among the different methods of grouping. However, the hypothesis that there has been any large increase in inequality between the developed and the less developed countries is questionable.

BIBLIOGRAPHY

Books

Aitchison, J. and Brown, J.A.C., The Lognormal Distribution, (Cambridge: University Press, London, 1957)

Alker, Jr., Hayward R., Mathematics and Politics, (The MacMillan Company, New York, 1965)

Coppock, Joseph D., International Economic Stability, (McGraw-Hill Book Company Inc., New York, 1962)

Ingram, James C., International Economic Problems, (John Wiley and Sons, Inc., New York, 1966)

Kravis, Irving B., The Structure of Income, (McGregor and Werner, Inc., Washington, D.C., 1962)

Kuznets, Simon, Economic Growth and Structure, (W. W. Norton and Company Inc., New York, 1965)

Kuznets, Simon, Modern Economic Growth, (Yale University Press, New Haven, Connecticut, 1967)

MacBean, Alasdair I., Export Instability and Economic Development, (George Allen and Unwin Ltd., London, 1966)

Michaely, Michael, Concentration in International Trade, (North-Holland Publishing Co., Amsterdam, Holland, 1962)

Morgan, Theodore, "Economic Relationships Among Nations: the Pattern of Commodity Trade," The Economic Ideas of Mankind. Ed. by B. Hoselitz (New York: Columbia University Press, 1965)

National Bureau of Economic Research, Problems in the International Comparison of Economic Accounts, (Princeton University Press, Princeton, New Jersey, 1957)

United Nations, Towards A New Trade Policy for Development, (United Nations Publications, New York, 1964)

United Nations, World Economic Survey, 1963, (United Nations Publications, New York, 1964)

Wilcox, Clair, Weatherford, Jr., Willis D. and Hunter, Holland, Economics of the World Today: Their Organization, Development, and Performance, (Harcourt, Brace and World, Inc., New York, 1962)

BIBLIOGRAPHY
CONTINUED

Periodicals

Bowman, Mary J., "A Graphical Analysis of Personal Income Distribution in the United States," *American Economic Review*, Vol. XXXV, (September, 1945)

Hainsworth, G. B., "The Lorenz Curve as a General Tool of Economic Analysis," *Economic Record*, (September, 1964)

Iyengar, Sreenivasa, "On the Standard Error of the Lorenz Concentration Ratio," Sankhya: *The Indian Journal of Statistics*, Vol. 22 (1960).

Kuznets, Simon, "Quantitative Aspects of the Economic Growth of Nations: I. Levels and Variability of Rates of Growth," *Economic Development and Cultural Change*, (October, 1956)

Kuznets, Simon, "Quantitative Aspects of the Economic Growth of Nations: IV, Distributions of National Income by Factor Shares," *Economic Development and Cultural Change*, (April, 1959)

Kuznets, Simon, "Quantitative Aspects of the Economic Growth of Nations: IX. Level and Structure of Foreign Trade: Comparison for Recent Years," *Economic Development and Cultural Change*, (October 1964, Part II)

Lorenz, M. C., Methods of Measuring Concentration of Wealth," *Publications of the American Statistical Association*, Vol. IX (New Series 1905)

Michaely, Michael, "The Shares of Countries in World Trade," *Review of Economics and Statistics*, Vol. 42, (August 1960)

Murti, V. N. and Pillai, K. N. C., "Distribution of Population by Expenditure Classes, (Central Statistical Organization, India, September 1960)

Patel, Surendra J., "The Economic Distance Between Nations: It's Origin, Measurement and Outlook," *Economic Journal*, Vol. 74 (March 1964)

Slesinger, R. E. "Some Comments on International Inequality as Related to International Trade for Emerging Nations," *Indian Economic Journal*, Vol. XIV, No. 1 (July - September 1966)

BIBLIOGRAPHY
CONTINUED

Stassart, J. "Do Economic Inequalities Between Nations Tend to Grow," _Annals of Public and Cooperative Economy_, Vol. 35 (October – December 1964)

Yntema, D., "Measures of the Inequality in the Personal Distribution of Wealth," _Journal of American Statistical Association_, Vol. XXVIII (1933)

APPENDIX I

The Total Value of GNP, Exports, Imports and Total Trade for
1950, 1954, 1958 and 1962.[a]

	(In Millions of Dollars)			
	1950	1954	1958	1962
GNP	717,024.3	850,310.4	985,642.2	1,175,942.1
Exports	70,414.3	88,795.4	112,101.7	145,300.0
Imports	69,238.1	87,385.8	112,158.6	146,717.3
Total Trade[b]	139,652.4	176,181.2	224,260.4	292,012.3

[a]Source: United Nations Yearbook of National Accounts
Statistics, (various issues) The values were arrived at by con-
verting the data for each country into United States dollars at
1960 prices. The study included seventy-one countries in 1950,
seventy-six countries in 1954, eighty-four countries in 1958,
and seventy-five countries in 1962.
[b]Total trade is the sum of the exports and imports of
goods and services.

APPENDIX II

Percentage Share of Total GNP, Exports, Imports and Total Trade
of Each Country for 1950 and 1962.[a]

1950

Countries[b]	GNP	Exports	Imports	Total Trade
Barbados	.0076	.0369	.0374	.0400
Mauritius	.0187	.0865	.0533	.0700
British Guiana	.0191	.0665	.0556	.0611
Iceland	.0212	.0683	.0760	.0721
Nicaragua	.0257	.0551	.0449	.0500
Cyprus	.0268	.0538	.0630	.0584
Paraguay	.0294	.0498	.0374	.0437
Trinidad	.0313	.1992	.1992	.1992
Costa Rica	.0319	.0706	.0660	.0683
Haite	.0334	.0524	.0599	.0561
Honduras	.0335	.0920	.0726	.0824
Panama	.0365	.1441	.1371	.1406
Cambodia	.0399	.0809	.0477	.0644
Tanzania	.0422	.0983	.1187	.1054
Uganda	.0425	.0959	.0777	.0868
Luxemburg	.0428	.3610	.2577	.3098
Jamaica	.0437	.1071	.1561	.1314
El Salvador	.0452	.0883	.0930	.0906
Dominican Republic	.0469	.1176	.1488	.1330
Bolivia	.0532	.1172	.0921	.1048
Kenya	.0649	.0839	.1795	.1313
Ecuador	.0653	.0953	.0940	.0947
Syria	.0671	.1018	.2139	.1574
Israel	.0732	.0382	.3958	.2175
Tunisia	.0776	.2073	.2458	.2264
Tawian	.0925	.0513	.0752	.0632
Guatemala	.0978	.1121	.1391	.1254
Rhodesia and Nyasaland	.1012	.5476	.5953	.5713
Burma	.1116	.1960	.0809	.1389
Ghana	.1123	.3688	.2428	.3063
Congo (D.R.)	.1222	.5439	.3572	.4513
Ceylon	.1314	.5375	.3987	.4677
Puerto Rico	.1467	.5314	.8588	.6937
Peru	.1742	.2823	.3673	.3244
Morocco	.2039	.4204	.4853	.4526
Portugal	.2101	.5064	.5484	.5272
Ireland	.2104	.5682	.8420	.7040
Algeria	.2233	.6074	.8439	.7246
Greece	.2541	.1335	.5994	.3645
Thailand	.2542	.5422	.2292	.3870

APPENDIX II (Continued)

Countries	GNP	Exports	Imports	Total Trade
Nigeria	.3023	.4259	.3037	.3653
Egypt	.3142	1.0252	1.2778	1.1504
Colombia	.3501	.5432	.7168	.6293
New Zealand	.3584	.6802	.8752	.7769
Finland	.4002	.8373	.6772	.7580
Phillippines	.4360	.6321	.6892	.6604
Chile	.4360	.5872	.1097	.4992
Turkey	.4372	.4025	.4759	.4389
Norway	.4436	1.3997	1.6781	1.5377
Venezuela	.4558	1.6488	1.3071	1.4794
Austria	.4978	.6675	.8565	.7612
Denmark	.5972	1.3631	1.4982	1.4401
South Africa	.6385	1.4798	1.7447	1.6111
Switzerland	.7777	1.7518	1.8379	1.7944
Pakistan	.7811	.7160	1.0091	.6414
Spain	.8045	.9687	.4630	.7079
Mexico	.9407	1.1404	1.4375	1.2877
Netherlands	.9924	3.1698	3.8173	3.4908
Brazil	.9978	.9955	.9301	.9631
Belgium	1.2122	2.5904	3.0706	2.8284
Sweden	1.2408	2.7651	2.5058	2.6365
Argentina	1.2454	1.7914	1.8371	1.8141
Australia	1.5496	2.1089	3.2404	2.6816
Japan	2.2680	2.2164	1.2791	1.7517
Italy	2.5154	2.2314	2.7730	2.4999
India	3.2537	2.4356	2.2704	2.3537
Canada	3.4756	6.9404	6.7058	6.8060
Germany	4.6202	4.3197	3.9039	4.1267
France	5.4261	7.5289	6.4784	7.0080
United Kingdom	7.9525	15.8212	14.8586	15.3440
United States	50.7951	20.3084	19.3535	19.8350

1962

Barbados	.0074	.0288	.0344	.0316
Malta	.0120	.0505	.0620	.0563
British Guiana	.0140	.0726	.0644	.0685
Mauritius	.0150	.0496	.0518	.0507
Iceland	.0220	.0933	.0910	.0922
Paraguay	.0253	.0353	.0369	.0361
Cyprus	.0291	.0598	.0919	.0756
Nicaragua	.0329	.0573	.0656	.0615
Honduras	.0347	.0534	.0600	.0567
Jordan	.0350	.0341	.0908	.0666
Bolivia	.0361	.0436	.0790	.0614
Costa Rica	.0382	.0651	.0758	.0705
Uganda	.0382	.0921	.0778	.0849
Luxembourg	.0396	.2960	.2895	.2928

APPENDIX II (Continued)

Countries	GNP	Exports	Imports	Total Trade
Luxembourg	.0396	.2960	.2895	.2928
Tobago & Trinidad	.0446	.2919	.2709	.2814
Tanzania	.0474	.1204	.1328	.1266
El Salvador	.0488	.1174	.0979	.1076
Cambodia	.0511	.0613	.0698	.0556
Kenya	.0544	.1116	.1620	.1369
Dominican Republic	.0554	.1115	.1624	.1370
Jamaica	.0595	.1705	.1689	.1680
Ecuador	.0686	.1096	.1032	.1064
Tunisia	.0722	.0909	.1527	.1220
Ethiopia	.0787	.0840	.0811	.0825
Syria	.0876	.1358	.1639	.1500
Guatemala	.0913	.0933	.1014	.0974
Uruguay	.1045	.1287	.1813	.1551
Sudan	.1068	.1830	.2014	.1922
Ghana	.1231	.3108	.2677	.2892
Ceylon	.1236	.3193	.3177	.3185
Rhodesia and Nyasaland	.1270	.4789	.3723	.4254
Burma	.1320	.1727	.1530	.1630
Taiwan	.1449	.1445	.1889	.1519
Iraq	.1466	.5003	.2981	.3987
Israel	.1492	.2273	.4900	.3593
Morocco	.1625	.2870	.3272	.3072
Ireland	.1698	.4459	.5395	.4930
Puerto Rico	.1824	.6819	.9440	.8136
Malaya	.1827	.7811	.6073	.6938
Peru	.1978	.4255	.3923	.4088
Portugal	.2325	.3798	.4575	.4188
Thailand	.2389	.3597	.3999	.3799
Nigeria	.2922	.3924	.4225	.4075
Korea	.3011	.1432	.3950	.2697
Greece	.3208	.2728	.5418	.4075
New Zealand	.3333	.6593	.6189	.6390
Colombia	.3642	.4319	.4527	.4424
Egypt	.4065	.5136	.6989	.6067
Chile	.4133	.3950	.4390	.4171
Finland	.4148	.9052	.9392	.9223
Norway	.4227	1.4749	1.5621	1.5187
Turkey	.5165	.2734	.4526	.3634
Phillippines	.5255	.9527	.8381	.8951
Austria	.5605	1.1900	1.1784	1.1842
Denmark	.5705	1.4719	1.6291	1.5509
Venezuela	.6406	1.8882	1.0352	1.4597
Pakistan	.6715	.5442	.6088	.5767
South Africa	.6962	1.6515	1.1778	1.4150
Switzerland	.8290	2.0023	2.2723	2.1380
Netherlands	1.0256	4.2182	4.1597	4.1889

APPENDIX II (Continued)

Countries	GNP	Exports	Imports	Total Trade
Argentina	1.0315	1.0862	1.0941	1.0902
Spain	1.0458	.9332	1.1234	1.0288
Belgium	1.0548	3.0392	3.0167	3.0280
Mexico	1.1375	1.0697	1.0046	1.0370
Sweden	1.1480	2.5327	2.5171	2.5249
Brazil	1.1811	.5705	.6836	.6274
Australia	1.4504	1.8286	2.0202	1.9249
India	3.0676	1.2299	1.7687	1.5006
Italy	3.1251	4.5170	4.6947	4.6064
Canada	3.4534	5.4363	5.3001	5.3679
Japan	4.1811	4.3738	3.9836	4.1778
France	5.7236	6.8902	6.6013	6.7452
United Kingdom	6.3196	10.3663	10.5182	10.5364
Germany	6.6826	10.8190	10.7044	10.6680
United States	46.4252	17.6187	16.5625	17.0883

^aSource: United Nations Yearbook of National Accounts,
(various issues) The absolute values of these percentages were
arrived at by converting the data for each country into United
States dollars at 1960 prices.
^bIn addition to the above countries Chad, Congo (Brazza-
ville), Indonesia, Togo and Iran were included in the 1954 and
1958 distributions.

APPENDIX III

Developed Countries	Less Developed Countries	
Australia	Afghanistan	Jordan
Austria	Algeria	Kenya
Belgium	Argentina	Korea (Republic)
Canada	Barbados	Malaya
Denmark	Bolivia	Malta
Finland	Brazil	Mauritius
France	British Guiana	Mexico
Germany	Burma	Morocco
Iceland	Cambodia	Nicaragua
Ireland	Ceylon	Nigeria
Israel	Chad	Pakistan
Italy	Chile	Panama
Japan	Colombia	Paraguay
Luxembourg	Congo (Brazzaville)	Peru
Netherland	Congo (D.R.)	Philippines
New Zealand	Costa Rica	Portugal
Norway	Cyprus	Puerto Rico
Sweden	Dominican Republic	Rhodesia & Nyasaland
Switzerland	Ecuador	South Africa
United Kingdom	Egypt	Spain
United States	El Salvador	Sudan
	Ethiopia	Syria
	Ghana	Tanzania
	Greece	Taiwan
	Guatemala	Thailand
	Haite	Togo
	Honduras	Trinadad & Tobago
	India	Tunisia
	Indonisia	Turkey
	Iran	Uganda
	Iraq	Uruguay
	Jamaica	Venezuela

Source: The division between developed and less developed countries was adapted from: James C. Ingram, _International Economic Problems_, (New York: John Wiley and Sons, 1966) p. 75.

APPENDIX IV

Countries Grouped by Per Capita Income Classes[a]

Less $100 Group 1		$250-500 Group 3		
Afghanistan	Ceylon	Brazil	Italy	
Barbados	Ecuador	British Guiana	Netherlands	
Bolivia	Egypt	Chile	Puerto Rico	
Burma	El Salvador	Colombia	Tobago &	
Cambodia	Ghana	Costa Rica	Trinidad	
Chad	Guatemala	Dominican	Venezuela	
Congo	Honduras	Republic		
(Brazzaville)	Iran	Greece	$1,000-2,000	
Congo (D.R.)	Iraq	Jamaica	Group 5	
Ethiopia	Jordan	Japan		
Haite	Korea	Malaya	Australia	
India	(Republic)	Malta	Belgium	
Indonesia	Morocco	Mauritius	Denmark	
Kenya	Nicaragua	Mexico	France	
Nigeria	Paraguay	Panama	Germany (F.R.)	
Pakistan	Peru	South Africa	Iceland	
Sudan	Phillipines	Spain	Luxembourg	
Tanzania	Portugal	Uruguay	New Zealand	
Togo	Rhodesia &		Norway	
Uganda	Nyasaland	$500-1,000	Sweden	
	Syria	Group 4	Switzerland	
$100-250	Taiwan		United Kingdom	
Group 2	Thailand	Argentina		
	Tunisia	Austria		
Algeria	Turkey	Cyprus	Over $2,000	
		Finland	Group 6	
		Ireland		
		Israel	Canada	
			United States	

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[a]Source: The per capita income classification was
adapted from: C. Wilcox, W. Weatherford and H. Hunter Econo-
mies of the World Today, (New York: Harcourt, Brace and Co.,
1962) p. 16-18.

APPENDIX V

Countries Grouped by Regions of the World.[a]

Group 1 English & European	Group 2 Latin American	Group 3 Middle East		
Australia	Argentina	Algeria	Malaya	
Austria	Barbados	Cyprus	Pakistan	
Belgium	Bolivia	Egypt	Phillippines	
Canada	Brazil	Iran	Taiwan	
Denmark	British Guiana	Iraq	Thailand	
Finland	Chile	Israel		
France	Colombia	Jordan	Group 5	
Germany (F.R.)	Costa Rica	Morocco	African	
Greece	Dominican	Syria		
Iceland	Republic	Tunisia	Chad	
Ireland	Ecuador	Turkey	Congo	
Italy	El Salvador		(Brazzaville)	
Luxembourg	Guatemala	Group 4	Congo (D.R.)	
Netherlands	Haiti	Asian	Ethiopia	
New Zealand	Honduras		Ghana	
Norway	Jamaica	Afghanistan	Kenya	
Portugal	Mexico	Burma	Malta	
South Africa	Nicaragua	Cambodia	Mauritius	
Spain	Panama	Ceylon	Nigeria	
Sweden	Paraguay	India	Rhodesia &	
Switzerland	Peru	Indonesia	Nyasaland	
United Kingdom	Puerto Rico	Japan	Sudan	
United States	Tobago &	Korea	Tanzania	
	Trinidad	(Republic)	Togo	
	Uruguay		Uganda	
	Venezuela			

[a]Source: This classification was adapted from C. Wilcox, W. Weatherford and H. Hunter, Economies of the World Today, (New York: Harcourt, Brace and Co., 1962), p. 16 - 18.

INEQUALITIES IN INTERNATIONAL TRADE
AMONG DEVELOPING NATIONS

by

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B. B. A., Washburn University, 1965

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AN ABSTRACT OF A MASTER'S REPORT

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MASTER OF ARTS

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KANSAS STATE UNIVERSITY
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The purpose of this report was to examine inequalities in the distribution of gross national product, exports, imports and total trade among eighty-five free market countries of the United Nations for the period, 1950 to 1962. The major concern is the purported divergency in income and trade between the developed and the less developed countries. An attempt was made to measure this divergency to see if the "gap" between the developed and the less developed countries is actually becoming greater.

To measure this divergency, the income and trade data of the countries was converted into United States dollars at 1960 prices. This provided a standard with which comparisons were made. The Lorenz curve concentration ratio was then used as a measure of inequality.

An examination of changes in inequality in the overall distribution of gross national product, exports, imports and total trade was first made. It was found that there has been no significant increase in inequality in the distribution of income or trade for the overall distribution of countries. This in itself is significant; however, it reveals very little about the changes that may have taken place between the developed and the less developed countries.

The countries were divided into a group of developed and a group of less developed countries and the changes in inequality were examined. There was no evidence of any increase in inequality between the developed and less developed countries in

the distribution of income. There was a slight increase in inequality in the distribution of trade. A more explicit division of the countries by per capita income classes was then made. The index of concentration exhibited a downward trend for the distribution of income, while the index for trade was almost the same.

A comparison was made between the United States and each of the per capita income groups. There was no increase in inequality between the United States and any of the per capita groups for either the distribution of income or trade. In fact, there was a downward trend in inequality for all groups except the lowest per capita income group.

An examination was made of inequality and changes in inequality in the distribution of income and trade for the different regions of the world. There was no significant change in inequality in the distribution of income for the regions. However, there appeared to be a slight increase in inequality in the distribution of trade. Results of comparisons of the English and European countries with each of the other groups showed no increase in inequality with the possible exception of Africa. An examination of inequality and changes in inequality within these regions was also made.

In general, the results of this study would tend to substantiate the view that the income and trade gap between the more developed and the less developed countries is not widening.